Code Letters for Progress Report 94, Project 1108-17
CONTINUOUS EVALUATION OF CORRUGATING MEDIUM

Company - Mill	Machine No.	Code Letter
The Chesapeake Corporation--West Point	1	--
Continental Can Company, Inc.--Hopewell	1	S
--Hodge	1	G
Crown Zellerbach Corporation--Baltimore	1	R
--Baltimore	2	K
--Bogalusa	4	--
--Lebanon	2	A
International Paper Company--Arecibo	F	O
--Bastrop	1	F
--Bastrop	2	M
--Georgetown	1	B
The Mead Corporation--Harriman	1	V
--Knoxville	1	I
--Lynchburg	2	C
--Sylva	1	--
St. Regis Container Corporation Mill Division--Coshocton	1	Q
North Carolina Pulp Company--Plymouth Weyerhaeuser Company, North Carolina Div.	3	U
Olin Mathieson Chemical Corporation--Monroe	1	--
--Monroe	2	--
Owens-Illinois Glass Company--Tomahawk	1	N
--Tomahawk	2	E
--Tomahawk	3	T
--Big Island	3	J
St. Joe Paper Company--Port St. Joe	1	W
Union Bag-Camp Paper Corporation--Savannah	2	P
West Virginia Pulp and Paper Company--Covington	6	H
--Covington	7	--
--Charleston	--	--
Packaging Corporation of America--Filer City	1	L
--Filer City	2	D

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS EVALUATION OF CORRUGATING MEDIUM

Project 1108-17

Report 94

A Progress Report

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

April 1, 1962

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THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS EVALUATION OF CORRUGATING MEDIUM

INTRODUCTION

As requested by the Technical Committee of the Fourdrinier Kraft Board Institute, Inc., the reports pertinent to the continuous evaluation of corrugating medium are now being prepared by The Institute of Paper Chemistry on a bimonthly basis instead of the previous monthly basis. This new system was initiated on August 1, 1961. This fourth report under the new system presents results obtained during the months of February and March, 1962.

During this fourth bimonthly period, 156 rolls of corrugating medium representing the production of twenty-three machines were evaluated. A tabulation of the number of rolls submitted from each machine during the months of February and March, 1962, is given in Table I. In connection with the data given in Table I, it should be mentioned that, effective September 1, 1961, at the request of the Technical Committee, the limit on the number of rolls submitted for evaluation from each machine during a given month was reduced from six to four.

Each sample of corrugating medium was evaluated for basis weight, caliper, Concora flat crush (conditioned after fluting), H. and D. flat crush on single-faced board, and runnability. Runnability was measured by corrugating each roll under standardized conditions on the Institute's corrugator into A-flute board at 600 feet per minute with minimum tension. If unsatisfactory runnability occurred at this speed, the corrugator was slowed down in increments of 25 f.p.m. until satisfactory runnability was obtained--i.e., no ruptured flutes. If the medium fabricated satisfactorily at 600 f.p.m. with minimum tension, further runs were made at higher tensions to determine when cracking occurred. The higher tensions used were 0.5 lb. per inch, 1.0 lb. per inch, and 1.5 lb. per inch.

TABLE I

NUMBER OF ROLLS OF CORRUGATING MEDIUM SUBMITTED
FOR EVALUATION FROM EACH MACHINE

February and March, 1962

Machine Code	Number of Rolls
A	8
B	7
C	8
D	7
E	8
F	3
G	5
H	6
I	8
J	4
K	8
L	7
M	6
N	8
O	6
P	7
Q	6
R	8
S	7
T	9
U	8
V	8
W	4
	Total 156

Flat crush was determined on the single-faced board obtained at a speed of 600 f.p.m. with minimum tension. The flat crush results, in addition to supplying information about quality, will provide data which may be useful in studying the relationship between Concora flat crush and combined board flat crush for each participant's medium.

The average test results obtained on the rolls of corrugating medium submitted by each participant during February and March, 1962 (current machine average) are shown in Table II and graphically presented in Fig. 1 to 4. In addition to a comparison of the test data obtained for the various machines, Table II also presents the current F.K.I. averages, cumulative F.K.I. averages, and the F.K.I. indexes. The current F.K.I. average is the average of test results for all machines participating in the study during a given period. The cumulative F.K.I. average is based on the results for the previous twelve-month period excluding the result for the current period. The F.K.I. index is obtained as follows:

$$\frac{\text{current F.K.I. average}}{\text{cumulative F.K.I. average}} \times 100 = \text{F.K.I. index (\%)}$$

The F.K.I. index provides a ready means of comparing the current quality with previous results. An index greater than 100% indicates that current quality is higher than the average result for the previous twelve periods; an index below 100% indicates that current quality is lower than the average result for the previous twelve periods.

The test results obtained on the sample lots submitted from the production of individual machines during February and March, 1962, are shown in Tables III through XXV for Machines A through W, respectively. The maximum, minimum, and average test results obtained on each sample lot are shown for all tests except basis weight for which only the average is shown; in addition the over-all average result for all sample lots submitted from a given machine is

TABLE II

SUMMARY OF CURRENT MACHINE AVERAGES

February and March, 1962

Mill Code	Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
A	27.0	10.0	34.4	31.0
B	27.4	10.6	37.2	34.1
C	27.1	10.5	36.5	31.9
D	26.6	9.8	35.3	30.3
E	26.8	10.6	36.9	32.6
F	26.9	10.8	40.8	34.2
G	27.4	10.4	39.1	34.9
H	27.0	10.8	34.9	30.6
I	26.5	11.4	36.7	33.2
J	27.2	10.7	35.7	31.5
K	27.4	10.1	35.5	30.5
L	26.1	10.0	34.6	30.3
M	26.5	10.6	38.6	34.4
N	26.9	10.4	36.0	32.3
O	27.9	9.8	33.9	31.5
P	26.4	8.8	36.3	30.6
Q	28.7	10.8	37.7	32.9
R	28.5	9.8	33.0	28.3
S	28.2	11.8	38.3	34.9
T	27.4	10.7	36.6	31.9
U	26.6	9.9	36.4	33.4
V	28.2	11.0	35.7	30.4
W	28.0	9.5	34.2	31.0
Current F.K.I. Average	27.2	10.4	36.3	32.0
Cumulative F.K.I. Average	27.3	10.2	36.7	33.4
F.K.I. Index, %	99.7	101.6	98.9	95.9

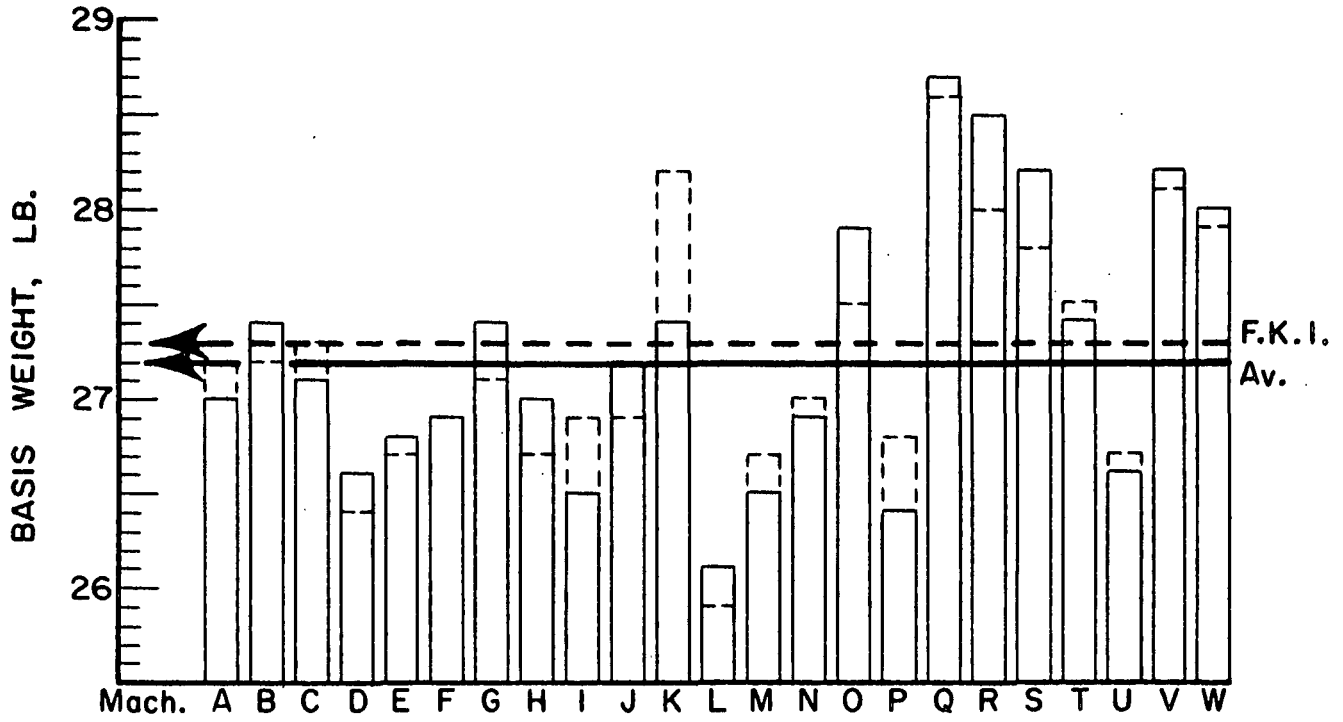


Figure 1. Comparison of Basis Weight Results

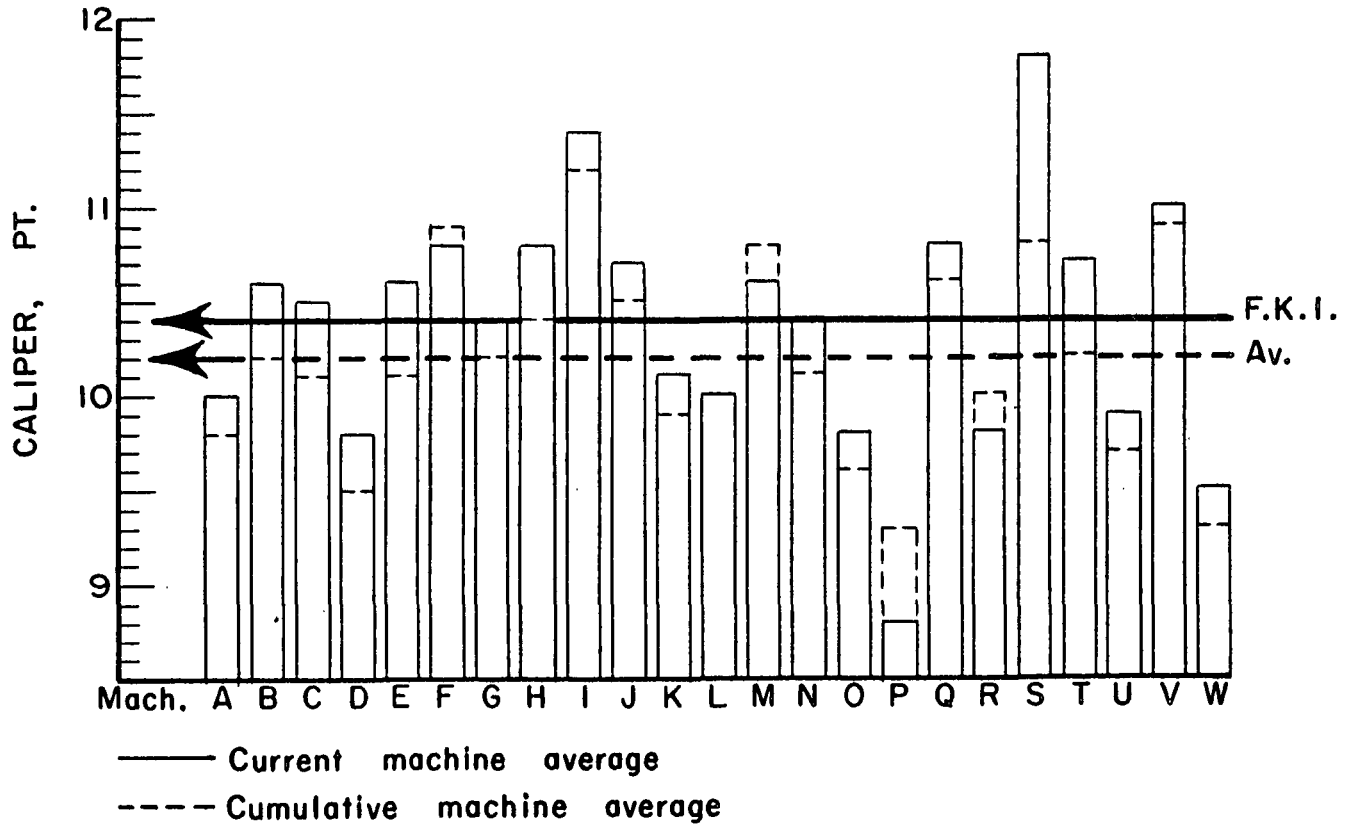


Figure 2. Comparison of Caliper Results

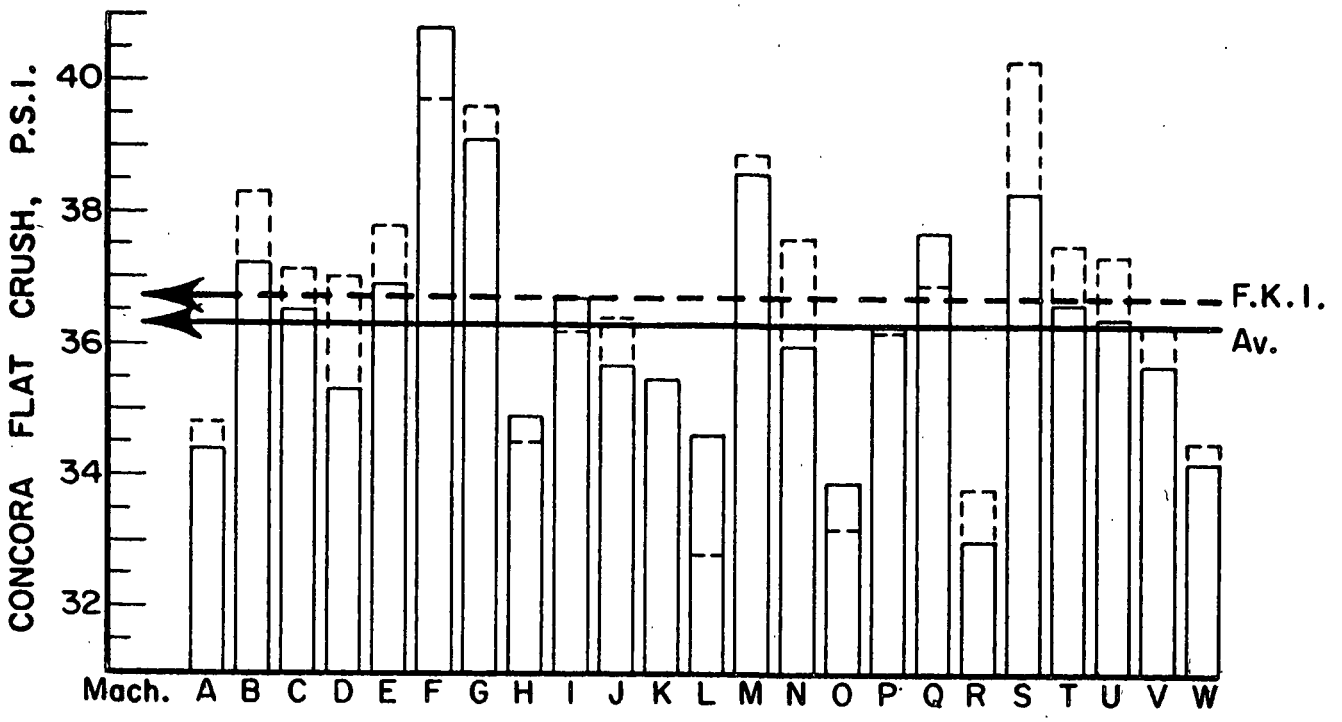
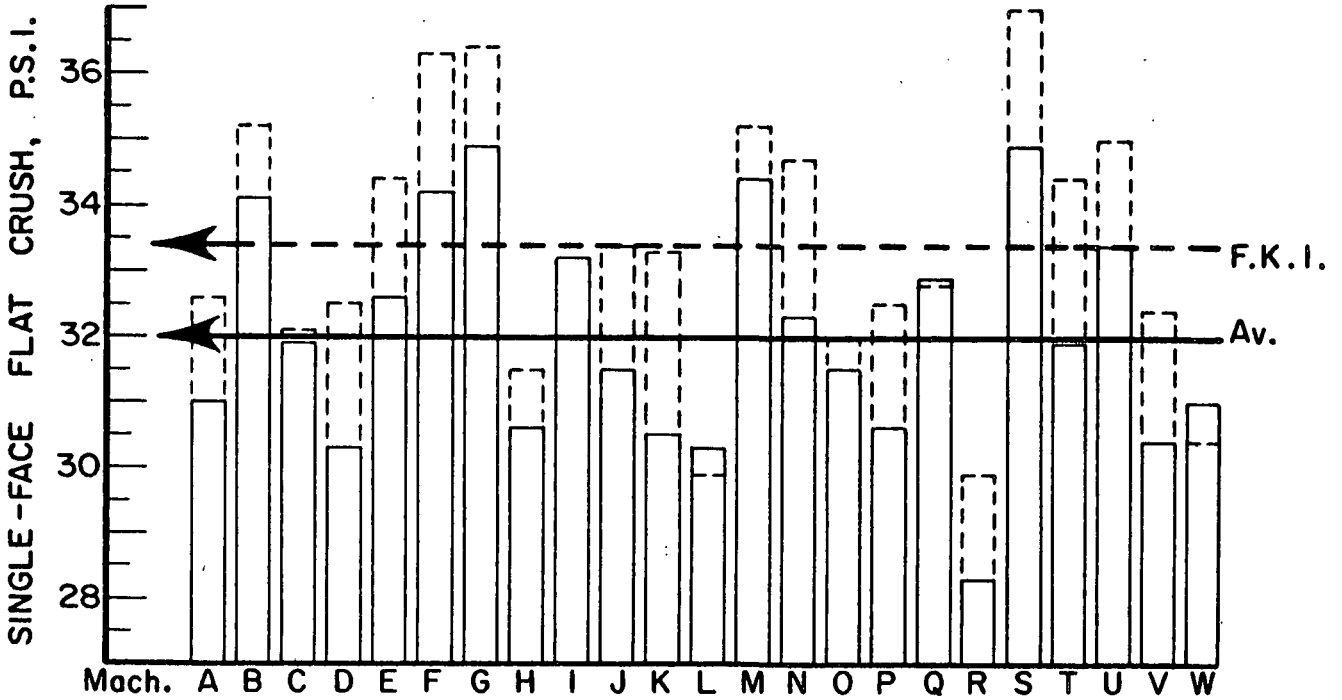


Figure 3. Comparison of Concora Flat Crush Results



——— Current machine average

- - - - - Cumulative machine average

Figure 4. Comparison of Single-Face Flat Crush Results

TABLE III

SUMMARY OF TEST RESULTS FOR MACHINE A
February and March, 1962

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb. per 1000 sq. ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, maximum tension at 600 f.p m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
A-1	1-10-62	2- 1-62	A-23	27.9	10.1	9.0	9.4	35.4	31.8	33.6	32.4	32.0	32.1	1-1/2
A-2	1-16-62	2- 1-62	A	26.9	10.0	9.1	9.5	38.4	33.0	34.6	32.4	30.6	31.3	1-1/2
A-3	1-17-62	2- 1-62	A-1	26.9	10.1	9.5	9.8	33.6	30.0	31.9	31.8	30.2	31.0	1-1/2
A-4	1-17-62	2- 1-62	A-2	27.1	10.0	9.2	9.8	37.8	31.8	34.4	29.4	27.6	28.4	1-1/2
A-5	2- 3-62	2-23-62	B-1	26.5	11.1	10.2	10.7	36.6	31.2	34.1	32.2	28.8	30.1	1-1/2
A-6	2- 4-62	2-23-62	B-2	27.7	10.8	10.0	10.4	39.0	34.8	36.4	34.4	33.2	33.7	1-1/2
A-7	2- 5-62	2-23-62	B-3	26.7	10.5	9.1	10.0	40.2	32.4	36.2	32.0	30.4	31.3	1-1/2
A-8	2- 5-62	2-23-62	B-4	26.0	11.0	10.0	10.6	35.4	33.0	34.3	30.8	28.8	29.8	1-1/2
Current Machine Average				27.0			10.0			34.4			31.0	
Cumulative Machine Average				27.2			9.8			34.8			32.6	
Machine Factor, %				99.2			102.7			98.8			94.9	
Machine Index, %				98.7			98.0			93.9			92.6	

TABLE IV

SUMMARY OF TEST RESULTS FOR MACHINE B
February and March, 1962

B-1	9-28-61	2- 2-62	472	27.1	11.0	10.2	10.5	39.6	36.0	38.0	33.0	30.0	31.8	Min.
B-2	2- 2-62	2-13-62	481	27.8	10.9	10.3	10.6	39.0	34.8	37.3	34.2	31.8	32.7	1-1/2
B-3	2- 3-62	2-15-62	482	27.6	10.9	10.2	10.6	37.8	34.8	36.5	37.4	34.8	36.0	1-1/2
B-4	2-16-62	2-27-62	483	27.1	11.0	10.0	10.5	40.8	36.0	38.2	36.4	33.4	35.4	1-1/2
B-5	2-17-62	2-27-62	484	27.6	10.7	10.0	10.3	40.2	36.0	38.0	34.8	33.2	34.0	1-1/2
B-6	3- 3-62	3-13-62	485	27.4	11.2	10.2	10.9	38.4	36.0	36.7	35.6	33.4	34.8	1-1/2
B-7	3- 4-62	3-13-62	486	27.1	11.0	10.2	10.6	37.2	33.6	35.8	35.2	33.2	34.3	1-1/2
Current Machine Average				27.4			10.6			37.2			34.1	
Cumulative Machine Average				27.2			10.2			38.3			35.2	
Machine Factor, %				100.5			103.6			97.1			97.1	
Machine Index, %				100.3			103.5			101.5			102.1	

TABLE V

SUMMARY OF TEST RESULTS FOR MACHINE C
February and March, 1962

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb. per 1000 sq. ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
C-1	1-26-62	2- 2-62	661	27.1	10.8	10.1	10.4	35.4	31.2	33.1	31.4	28.4	30.4	1-1/2
C-2	1-26-62	2- 2-62	662	26.8	10.6	10.0	10.2	39.6	34.8	37.2	34.6	29.2	32.5	1-1/2
C-3	2-18-62	2-28-62	669	27.5	11.7	11.0	11.3	37.2	30.0	33.8	32.6	28.6	30.4	1-1/2
C-4	2-18-62	2-26-62	670	28.3	11.8	10.9	11.2	40.2	32.4	36.0	34.4	31.4	32.7	1-1/2
C-5	2-22-62	2-27-62	677	25.8	10.0	9.2	9.7	38.4	35.4	37.0	34.4	31.0	32.8	1-1/2
C-6	2-22-62	2-27-62	678	25.8	10.1	8.8	9.8	39.0	36.0	37.1	35.8	32.6	34.0	1-1/2
C-7	3- 9-62	3-16-62	685	27.6	11.8	10.3	10.9	44.4	36.6	39.8	32.4	31.2	31.7	1-1/2
C-8	3- 9-62	3-16-62	686	28.0	11.8	10.2	11.0	40.8	33.6	37.7	31.0	29.8	30.5	1-1/2
Current Machine Average				27.1			10.5			36.5			31.9	
Cumulative Machine Average				27.3			10.1			37.1			32.1	
Machine Factor, %				99.2			104.2			98.3			99.4	
Machine Index, %				99.3			103.1			99.4			95.4	

TABLE VI

SUMMARY OF TEST RESULTS FOR MACHINE D
February and March, 1962

D-1	1-22-62	1-29-62	4	26.0	12.8	8.8	10.6	37.8	33.6	35.9	30.4	28.8	29.8	1-1/2
D-2	1-27-62	2- 1-62	5	27.4	10.6	9.4	10.0	36.0	33.6	34.7	34.0	30.4	32.5	1-1/2
D-3	2-12-62	2-14-62	6	27.7	9.9	9.1	9.6	37.8	35.4	36.2	28.0	27.0	27.5	1-1/2
D-4	2-20-62	2-23-62	7	25.7	9.8	8.8	9.3	37.2	31.8	35.4	30.2	29.0	29.7	1-1/2
D-5	2-25-62	3- 1-62	8	26.2	10.0	9.0	9.6	37.2	34.8	35.9	33.4	30.8	32.2	1-1/2
D-6	3- 5-62	3- 8-62	9	26.8	11.0	10.0	10.4	34.8	32.4	33.8	32.2	29.8	31.1	1-1/2
D-7	3-10-62	3-15-62	10	26.3	10.3	9.0	9.5	38.4	33.6	35.5	31.4	28.6	29.6	1-1/2
Current Machine Average				26.6			9.8			35.3			30.3	
Cumulative Machine Average				26.4			9.5			37.0			32.5	
Machine Factor, %				100.5			103.8			95.6			93.5	
Machine Index, %				97.3			96.3			96.4			90.7	

TABLE VII

SUMMARY OF TEST RESULTS FOR MACHINE E
February and March, 1962

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb. per 1000 sq. ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
E-1	2- 2-62	2-20-62	--	26.9	10.8	10.0	10.3	40.2	37.8	39.6	37.0	34.4	35.6	1-1/2
E-2	2- 6-62	2-20-62	--	26.8	10.8	10.0	10.2	39.6	37.2	38.5	34.6	33.6	34.1	1-1/2
E-3	2-10-62	2-20-62	--	26.5	11.0	10.3	10.6	39.0	33.6	37.0	33.4	33.2	33.4	1-1/2
E-4	2-15-62	2-26-62	--	26.8	10.8	10.2	10.4	38.4	34.8	36.6	33.0	31.0	32.3	1-1/2
E-5	3- 6-62	3-20-62	--	27.4	11.2	10.8	11.0	40.2	36.0	37.8	33.6	31.0	32.3	1-1/2
E-6	3- 9-62	3-20-62	--	26.9	11.2	10.8	11.1	37.8	34.8	35.6	30.8	29.8	30.4	1
E-7	3-13-62	3-20-62	--	26.5	11.2	10.0	10.4	36.6	34.2	35.3	32.0	29.4	30.8	1-1/2
E-8	3-14-62	3-20-62	--	26.8	11.0	10.2	10.6	35.4	33.6	34.4	32.2	30.4	31.6	1-1/2
Current Machine Average				26.8			10.6			36.9			32.6	
Cumulative Machine Average				26.7			10.1			37.8			34.4	
Machine Factor, %				100.6			104.8			97.5			94.6	
Machine Index, %				98.1			103.5			100.5			97.4	

TABLE VIII

SUMMARY OF TEST RESULTS FOR MACHINE F
February and March, 1962

F-1	2-16-62	2-20-62	656	27.3	10.9	10.4	10.7	43.8	40.8	42.4	38.0	34.4	35.5	1-1/2
F-2	2-27-62	3- 6-62	657	26.6	11.2	10.7	10.9	42.0	36.6	39.4	32.2	30.2	31.4	1-1/2
F-3	3-12-62	3-19-62	658	26.8	11.4	10.0	10.8	43.2	38.4	40.8	36.6	34.0	35.6	1-1/2
Current Machine Average				26.9			10.8			40.8			34.2	
Cumulative Machine Average				26.9			10.9			39.7			36.3	
Machine Factor, %				100.0			99.3			102.9			94.1	
Machine Index, %				98.4			105.5			111.3			102.3	

TABLE IX

SUMMARY OF TEST RESULTS FOR MACHINE G
February and March, 1962

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb. per 1000 sq. ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
G-1	1-24-62	2- 5-62	41	27.0	10.1	9.5	9.9	39.0	36.0	37.7	37.4	35.8	36.5	1-1/2
G-2	2-15-62	2-28-62	42	28.3	10.6	10.1	10.4	43.2	39.0	40.6	38.0	33.8	35.4	1-1/2
G-3	2-16-62	2-28-62	43	27.4	10.8	10.3	10.6	40.8	37.8	39.2	34.0	31.4	33.0	1-1/2
G-4	2-26-62	3-13-62	44	26.9	10.3	9.8	10.1	42.0	39.0	39.8	37.4	34.4	35.8	1-1/2
G-5	3-10-62	3-23-62	45	27.2	11.2	10.2	10.8	39.6	37.2	38.3	34.8	32.8	33.9	1-1/2
Current Machine Average				27.4			10.4			39.1			34.9	
Cumulative Machine Average				27.1			10.2			39.6			36.4	
Machine Factor, %				101.1			102.0			98.9			95.9	
Machine Index, %				100.2			101.4			106.6			104.4	

TABLE X

SUMMARY OF TEST RESULTS FOR MACHINE H
February and March, 1962

H-1	1- 5-62	1-18-62	192	27.0	10.8	10.0	10.4	39.6	34.2	36.8	35.2	32.6	33.8	1-1/2
H-2	1-16-62	2-15-62	193	26.9	11.7	10.9	11.2	34.2	30.0	32.6	29.0	26.4	27.5	Min.
H-3	1-23-62	2-15-62	194	27.1	11.1	10.8	10.9	37.8	34.8	35.8	33.6	30.6	32.0	1
H-4	1-29-62	2-15-62	195	26.8	11.3	10.3	10.7	36.0	33.0	34.7	31.8	28.0	30.2	1/2
H-5	2- 2-62	2-15-62	196	27.1	10.7	10.3	10.5	36.6	32.4	34.7	30.6	28.4	29.3	1-1/2
H-6	2-22-62	3-15-62	197	26.8	11.2	10.8	11.0	36.6	32.4	34.9	32.4	29.4	30.8	1
Current Machine Average				27.0			10.8			34.9			30.6	
Cumulative Machine Average				26.7			10.4			34.5			31.5	
Machine Factor, %				101.0			104.2			101.2			97.3	
Machine Index, %				98.7			105.6			95.2			91.6	

TABLE XI

SUMMARY OF TEST RESULTS FOR MACHINE I
February and March, 1962

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb. per 1000 sq. ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
I-1	1-31-62	2- 7-62	667	26.8	11.7	10.8	11.0	39.0	33.6	36.1	33.8	29.8	32.8	1-1/2
I-2	1-31-62	2- 7-62	668	26.5	11.5	10.0	11.0	37.2	33.6	36.1	34.8	31.4	33.0	1-1/2
I-3	2-11-62	2-16-62	675	26.0	12.5	11.0	11.7	36.6	30.0	33.1	34.2	30.0	32.1	1-1/2
I-4	2-11-62	2-16-62	676	26.1	12.8	11.0	11.8	37.8	33.6	35.4	31.6	29.2	30.3	1-1/2
I-5	2-26-62	3- 7-62	683	26.6	11.1	10.2	10.7	42.0	34.8	38.3	35.8	33.4	34.4	1-1/2
I-6	2-26-62	3- 7-62	684	26.5	12.1	10.1	11.1	39.6	34.2	36.2	36.6	33.4	34.6	1-1/2
I-7	3-12-62	3-19-62	691	26.8	12.4	10.8	11.8	40.8	38.4	39.2	36.8	32.6	34.9	1-1/2
I-8	3-12-62	3-19-62	692	26.8	12.6	10.9	11.7	40.8	36.6	38.8	36.0	31.4	33.6	1-1/2
Current Machine Average				26.5			11.4			36.7			33.2	
Cumulative Machine Average				26.9			11.2			36.2			33.2	
Machine Factor, %				98.5			101.1			101.4			100.0	
Machine Index, %				97.1			111.1			99.9			99.3	

TABLE XII

SUMMARY OF TEST RESULTS FOR MACHINE J
February and March, 1962

J-1	1-29-62	2-27-62	5558	26.6	10.5	10.0	10.3	37.8	35.4	36.7	34.6	32.0	33.2	1
J-2	2- 4-62	2-21-62	860	27.2	10.9	10.4	10.6	36.6	34.2	35.2	32.8	30.4	31.2	1
J-3	2-15-62	2-27-62	2971	27.8	11.0	10.3	10.8	37.2	34.8	36.0	31.6	28.6	30.6	1
J-4	2-20-62	2-27-62	3800	27.4	11.1	10.7	10.9	35.4	34.2	34.9	31.6	30.2	31.0	1-1/2
Current Machine Average				27.2			10.7			35.7			31.5	
Cumulative Machine Average				26.9			10.5			36.4			33.4	
Machine Factor, %				101.1			101.7			97.9			94.2	
Machine Index, %				99.7			104.2			97.3			94.2	

TABLE XIII

SUMMARY OF TEST RESULTS FOR MACHINE K
February and March, 1962

Code	Date Made	Date Recd.	Mill Roll No.	Basis Weight, lb. per 1000 sq. ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
K-1	2-21-62	2-27-62	121	28.7	10.2	9.4	9.9	42.0	36.0	38.3	36.2	34.2	35.2	1-1/2
K-2	2-21-62	2-27-62	122	29.0	10.5	9.7	10.2	40.2	37.2	38.4	37.6	35.8	36.8	1-1/2
K-3	2-21-62	2-27-62	123	26.8	10.8	9.7	10.0	37.8	34.8	36.2	31.0	30.0	30.5	1-1/2
K-4	2-21-62	2-27-62	124	28.3	10.3	9.3	9.9	41.4	33.6	36.1	30.6	29.0	29.8	1-1/2
K-5	3-14-62	3-23-62	125	26.2	10.8	9.8	10.3	34.8	30.0	32.5	29.2	25.6	27.4	1-1/2
K-6	3-14-62	3-23-62	126	25.6	10.9	9.2	10.1	34.2	31.2	32.8	27.6	24.8	26.7	1-1/2
K-7	3-15-62	3-23-62	127	27.0	10.9	9.4	10.3	36.0	33.0	34.2	29.0	27.4	27.9	1-1/2
K-8	3-15-62	3-23-62	128	27.3	11.0	9.9	10.2	36.6	34.2	35.6	31.8	28.2	29.8	1-1/2
Current Machine Average				27.4			10.1			35.5			30.5	
Cumulative Machine Average				28.2			9.9			35.5			33.3	
Machine Factor, %				97.0			102.3			100.0			91.6	
Machine Index, %				100.2			98.9			96.8			91.3	

TABLE XIV

SUMMARY OF TEST RESULTS FOR MACHINE L
February and March, 1962

Code	Date Made	Date Recd.	Mill Roll No.	Basis Weight, lb. per 1000 sq. ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
L-1	1-22-62	1-29-62	4	26.0	10.0	9.5	9.8	37.2	33.0	35.0	29.6	28.4	29.2	1-1/2
L-2	1-27-62	2- 1-62	5	26.3	10.0	9.2	9.7	34.2	31.8	32.8	30.8	28.8	29.8	1-1/2
L-3	2-12-62	2-15-62	6	26.2	9.9	9.7	9.8	36.0	32.4	34.1	32.4	31.6	31.9	1-1/2
L-4	2-19-62	2-23-62	7	25.8	11.0	10.0	10.5	34.8	33.0	34.0	29.4	28.4	29.1	1-1/2
L-5	2-24-62	3- 1-62	8	26.7	10.4	9.9	10.1	34.8	33.6	34.6	32.4	30.2	31.0	1-1/2
L-6	3- 5-62	3- 8-62	9	25.8	10.6	10.0	10.2	36.0	33.0	34.4	30.6	29.0	30.0	1-1/2
L-7	3-11-62	3-15-62	10	25.7	10.2	9.4	9.9	38.4	34.8	37.1	32.6	29.8	31.5	1-1/2
Current Machine Average				26.1			10.0			34.6			30.3	
Cumulative Machine Average				25.9			10.0			32.8			29.9	
Machine Factor, %				100.5			100.0			105.2			101.6	
Machine Index, %				95.4			97.9			94.2			90.8	

TABLE XV

SUMMARY OF TEST RESULTS FOR MACHINE M
February and March, 1962

M-1	1-30-62	2- 2-62	301	25.9	10.9	10.2	10.6	38.4	34.8	36.6	34.0	31.4	32.6	1-1/2
M-2	1-31-62	2- 7-62	302	26.0	10.9	10.0	10.6	41.4	35.4	38.2	34.0	30.6	32.4	1-1/2
M-3	2- 5-62	2-12-62	303	26.5	10.8	10.0	10.3	40.8	36.6	39.0	36.6	34.6	35.6	1-1/2
M-4	2-13-62	2-20-62	304	27.0	10.9	10.0	10.5	42.0	39.6	41.0	37.2	34.6	35.8	1-1/2
M-5	2-22-62	3- 2-62	305	27.0	11.4	10.1	10.8	39.6	36.6	38.5	35.6	34.4	35.2	1-1/2
M-6	3-12-62	3-19-62	306	26.3	11.2	10.2	10.7	41.4	36.6	38.4	37.0	33.6	35.2	1-1/2
Current Machine Average				26.5			10.6			38.6			34.4	
Cumulative Machine Average				26.7			10.8			38.9			35.2	
Machine Factor, %				99.2			97.8			99.3			97.9	
Machine Index, %				96.9			103.3			105.3			103.0	

TABLE XVI

SUMMARY OF TEST RESULTS FOR MACHINE N
February and March, 1962

Code	Date Made	Date Recd.	Mill Roll No.	Basis Weight, lb. per 1000 sq. ft.	Caliper, points Max.	Caliper, points Min.	Caliper, points Av.	Concora Flat Crush, p.s.i. Max.	Concora Flat Crush, p.s.i. Min.	Concora Flat Crush, p.s.i. Av.	Single-Face Flat Crush, p.s.i. Max.	Single-Face Flat Crush, p.s.i. Min.	Single-Face Flat Crush, p.s.i. Av.	Runnability, maximum tension at 600 f.p.m., lb./in.
N-1	2- 1-62	2-20-62	--	27.1	10.3	10.0	10.1	37.2	34.2	35.9	35.2	32.0	33.8	1
N-2	2- 5-62	2-20-62	--	26.7	10.5	10.1	10.3	37.2	33.0	35.2	33.2	31.6	32.6	1-1/2
N-3	2-10-62	2-20-62	--	27.3	10.7	10.0	10.2	38.4	34.8	37.0	33.4	32.0	32.8	1-1/2
N-4	2-14-62	2-26-62	--	27.2	10.5	10.0	10.2	39.6	36.0	37.4	34.0	30.8	32.4	1-1/2
N-5	3-13-62	3-20-62	--	26.5	11.0	10.2	10.6	36.6	34.2	35.4	32.8	31.0	32.0	1-1/2
N-6	3-17-62	3-23-62	--	27.2	11.0	10.2	10.7	37.2	31.8	34.9	31.0	29.6	30.3	1-1/2
N-7	3-20-62	3-23-62	--	26.5	10.9	10.0	10.4	37.8	34.2	36.1	34.4	31.0	33.1	1-1/2
N-8	3-21-62	3-23-62	--	26.9	11.2	10.2	10.8	37.2	34.2	35.8	33.4	29.6	31.9	1-1/2
Current Machine Average				26.9			10.4			36.0			32.3	
Cumulative Machine Average				27.0			10.1			37.6			34.7	
Machine Factor, %				99.4			103.3			95.7			93.3	
Machine Index, %				98.5			101.8			98.0			96.8	

TABLE XVII

SUMMARY OF TEST RESULTS FOR MACHINE O
February and March, 1962

O-1	1- 5-62	2-22-62	41	28.2	10.2	9.5	10.0	36.6	34.2	35.6	36.4	32.8	33.6	1/2
O-2	1- 9-62	2-22-62	42	27.6	10.0	9.4	9.7	35.4	31.8	33.7	31.6	29.2	30.6	1/2
O-3	1-12-62	2-22-62	43	28.2	10.0	9.2	9.8	38.4	34.2	35.5	34.4	31.2	32.9	1-1/2
O-4	1-16-62	2-22-62	44	27.9	10.0	9.6	9.9	35.4	30.6	32.9	33.2	30.4	32.0	1-1/2
O-5	1-23-62	2-22-62	45	28.2	10.7	10.0	10.1	34.2	32.4	33.4	31.6	28.4	30.3	1/2
O-6	1-29-62	2-22-62	46	27.4	10.0	9.0	9.3	34.8	29.4	32.3	32.6	27.2	29.8	1/2
Current Machine Average				27.9			9.8			33.9			31.5	
Cumulative Machine Average				27.5			9.6			33.2			32.0	
Machine Factor, %				101.6			102.0			102.2			98.7	
Machine Index, %				102.1			95.9			92.4			94.4	

TABLE XVIII

SUMMARY OF TEST RESULTS FOR MACHINE P
February and March, 1962

Code	Date Made	Date Recd.	Mill Roll No.	Basis Weight, lb. per 1000 sq. ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
P-1	2- 4-62	2-13-62	481	26.9	9.2	8.7	9.0	40.2	33.0	37.2	31.0	28.6	29.8	1-1/2
P-2	2- 6-62	2-13-62	482	26.9	9.0	8.4	8.7	39.0	34.2	36.4	30.8	29.4	30.0	1-1/2
P-3	2-10-62	2-20-62	483	26.1	9.0	8.3	8.8	36.0	33.0	34.8	31.2	28.6	29.7	1-1/2
P-4	2-11-62	2-20-62	484	26.3	9.0	8.3	8.7	37.2	34.8	36.6	35.0	32.0	33.1	1-1/2
P-5	3-11-62	3-19-62	485	26.9	9.0	8.7	8.9	39.6	34.8	36.8	31.6	30.0	30.7	1-1/2
P-6	3-14-62	3-20-62	486	26.0	9.1	8.6	8.8	36.6	33.6	35.8	31.4	29.4	30.4	1-1/2
P-7	3-14-62	3-20-62	487	25.7	9.0	8.3	8.6	39.0	34.8	36.4	31.6	29.4	30.6	1-1/2
Current Machine Average				26.4			8.8			36.3			30.6	
Cumulative Machine Average				26.8			9.3			36.2			32.5	
Machine Factor, %				98.5			94.5			100.2			94.1	
Machine Index, %				96.7			85.9			98.9			91.6	

TABLE XIX

SUMMARY OF TEST RESULTS FOR MACHINE Q
February and March, 1962

Q-1	1-17-62	2- 2-62	396	28.6	11.0	10.2	10.7	39.6	34.2	36.0	33.2	30.8	32.0	1-1/2
Q-2	1-25-62	2- 2-62	397	28.0	10.9	10.3	10.6	41.4	34.2	38.9	32.8	32.0	32.5	1-1/2
Q-3	2-14-62	2-27-62	398	29.2	11.8	10.3	11.0	42.6	37.8	39.6	36.0	34.4	35.2	1-1/2
Q-4	2-22-62	2-27-62	399	29.5	11.7	10.9	11.2	36.6	34.2	35.5	31.6	29.6	30.7	1-1/2
Q-5	3- 6-62	3-19-62	400	29.0	11.8	10.2	11.1	42.0	36.0	38.8	37.6	34.8	35.9	1-1/2
Q-6	3-14-62	3-19-62	401	27.7	10.9	10.0	10.6	42.0	34.8	37.4	33.6	27.4	31.2	1-1/2
Current Machine Average				28.7			10.8			37.7			32.9	
Cumulative Machine Average				28.6			10.6			36.9			32.8	
Machine Factor, %				100.1			102.3			102.2			100.3	
Machine Index, %				104.9			106.2			102.8			98.4	

TABLE XX

SUMMARY OF TEST RESULTS FOR MACHINE R
February and March, 1962

Code	Date Made	Date Recd.	Mill Roll No.	Basis Weight, lb. per 1000 sq. ft.	Caliper, points Max.	Caliper, points Min.	Caliper, points Av.	Concora Flat Crush, p.s.i. Max.	Concora Flat Crush, p.s.i. Min.	Concora Flat Crush, p.s.i. Av.	Single-Face Flat Crush, p.s.i. Max.	Single-Face Flat Crush, p.s.i. Min.	Single-Face Flat Crush, p.s.i. Av.	Runnability, maximum tension at 600 f.p.m., lb./in.
R-1	2-13-62	2-27-62	118	29.8	10.3	9.6	10.0	39.0	34.8	36.6	32.6	31.6	32.2	1-1/2
R-2	2-13-62	2-27-62	119	28.6	10.0	9.3	9.7	37.2	34.8	35.9	32.8	31.0	31.6	1-1/2
R-3	2-13-62	2-27-62	120	28.0	10.0	9.2	9.5	33.6	33.0	33.2	29.0	28.0	28.4	1-1/2
R-4	2-13-62	2-27-62	121	28.7	10.0	9.6	9.8	35.4	31.2	33.6	31.0	28.2	29.6	1-1/2
R-5	3-13-62	3-23-62	122	27.5	10.0	9.1	9.7	30.6	28.2	29.6	25.8	24.4	25.0	1-1/2
R-6	3-13-62	3-23-62	123	28.9	10.3	9.7	10.0	31.2	28.8	29.5	27.0	24.8	26.1	1-1/2
R-7	3-13-62	3-23-62	124	27.6	10.4	9.5	10.0	34.2	29.4	32.4	27.8	26.6	27.1	1-1/2
R-8	3-13-62	3-23-62	125	29.0	10.8	9.0	9.9	34.2	31.8	33.2	27.4	25.4	26.2	1-1/2
Current Machine Average				28.5			9.8			33.0			28.3	
Cumulative Machine Average				28.0			10.0			33.8			29.9	
Machine Factor, %				101.9			98.4			97.8			94.5	
Machine Index, %				104.4			96.2			90.0			84.6	

TABLE XXI

SUMMARY OF TEST RESULTS FOR MACHINE S
February and March, 1962

Code	Date Made	Date Recd.	Mill Roll No.	Basis Weight, lb. per 1000 sq. ft.	Caliper, points Max.	Caliper, points Min.	Caliper, points Av.	Concora Flat Crush, p.s.i. Max.	Concora Flat Crush, p.s.i. Min.	Concora Flat Crush, p.s.i. Av.	Single-Face Flat Crush, p.s.i. Max.	Single-Face Flat Crush, p.s.i. Min.	Single-Face Flat Crush, p.s.i. Av.	Runnability, maximum tension at 600 f.p.m., lb./in.
S-1	1-30-62	2-14-62	348	27.1	11.9	11.2	11.5	37.8	34.8	36.2	33.8	30.0	31.8	1-1/2
S-2	2- 7-62	2-14-62	349	27.3	12.0	11.3	11.8	37.2	34.8	36.0	33.8	30.6	33.0	1-1/2
S-3	2-14-62	3- 6-62	350	27.8	12.2	11.2	11.9	39.0	36.0	37.4	36.4	34.0	35.3	1-1/2
S-4	2-21-62	3- 6-62	351	28.3	12.5	11.8	12.2	43.2	38.4	40.6	37.6	35.0	36.0	1-1/2
S-5	2-27-62	3- 8-62	352	27.8	11.4	11.1	11.2	37.2	34.2	35.6	36.0	32.4	34.1	1-1/2
S-6	3- 9-62	3-20-62	353	28.4	11.3	10.8	11.1	40.8	36.0	37.4	35.8	33.4	34.8	1-1/2
S-7	3-14-62	3-20-62	354	30.4	13.2	12.8	13.0	46.8	43.2	44.9	40.6	39.0	39.5	1-1/2
Current Machine Average				28.2			11.8			38.3			34.9	
Cumulative Machine Average				27.8			10.8			40.3			37.0	
Machine Factor, %				101.2			109.3			95.1			94.5	
Machine Index, %				103.1			115.5			104.4			104.5	

TABLE XXII

SUMMARY OF TEST RESULTS FOR MACHINE T
February and March, 1962

Code	Date Made	Date Recd.	Mill Roll No.	Basis Weight, lb. per 1000 sq. ft.	Caliper, points Max.	Caliper, points Min.	Caliper, points Av.	Concora Flat Crush, p.s.i. Max.	Concora Flat Crush, p.s.i. Min.	Concora Flat Crush, p.s.i. Av.	Single-Face Flat Crush, p.s.i. Max.	Single-Face Flat Crush, p.s.i. Min.	Single-Face Flat Crush, p.s.i. Av.	Runnability, maximum tension at 600 f.p.m., lb./in.
T-1	1-19-62	1-29-62	--	27.4	10.8	10.0	10.3	42.0	35.4	37.8	34.6	31.6	33.1	1-1/2
T-2	2- 3-62	2-20-62	--	27.0	10.9	10.2	10.7	37.8	31.8	35.3	31.2	29.0	29.8	1/2
T-3	2- 7-62	2-20-62	--	26.8	10.8	10.2	10.5	39.0	36.0	37.3	34.4	31.4	33.0	1-1/2
T-4	2-13-62	2-26-62	--	26.9	11.0	10.5	10.8	36.0	31.8	34.1	32.8	28.8	30.8	1
T-5	2-19-62	2-26-62	--	27.8	11.7	10.8	11.2	40.8	34.2	37.3	32.8	31.4	32.0	1-1/2
T-6	3- 7-62	3-20-62	--	27.6	11.2	10.2	10.8	36.0	33.0	34.4	32.8	29.4	30.9	1/2
T-7	3-15-62	3-20-62	--	28.0	11.2	10.8	11.0	40.8	36.6	38.4	33.8	31.2	32.3	1-1/2
T-8	3-16-62	3-20-62	--	27.5	11.0	10.2	10.6	40.8	36.6	38.6	35.0	30.6	32.6	1-1/2
T-9	3-17-62	3-23-62	--	27.1	10.8	10.2	10.4	37.8	33.6	35.8	34.2	30.8	32.5	1-1/2
Current Machine Average				27.4			10.7			36.6			31.9	
Cumulative Machine Average				27.5			10.2			37.5			34.4	
Machine Factor, %				99.5			104.7			97.6			92.7	
Machine Index, %				100.1			104.7			99.7			95.4	

TABLE XXIII

SUMMARY OF TEST RESULTS FOR MACHINE U
February and March, 1962

U-1	1- 2-62	1-24-62	41	26.4	10.1	9.4	9.8	38.4	34.2	36.0	36.0	32.6	34.5	1/2
U-2	1- 8-62	1-24-62	241	26.3	9.8	8.9	9.1	39.0	36.0	37.7	38.8	35.6	36.8	1-1/2
U-3	1-24-62	2- 9-62	717	26.8	9.5	8.8	9.1	37.2	34.2	35.5	33.6	31.0	32.2	Min.
U-4	1-29-62	2- 9-62	875	26.7	10.7	9.5	10.0	39.0	34.8	37.0	33.0	31.4	32.1	1-1/2
U-5	2- 1-62	2-14-62	4	26.9	10.8	10.0	10.4	39.0	34.2	37.3	32.4	30.4	31.5	1
U-6	2-14-62	3- 7-62	408	27.4	10.4	9.9	10.2	39.0	35.4	36.8	37.4	33.2	35.7	Note a
U-7	3- 1-62	3- 9-62	8	25.5	11.2	9.6	10.3	38.4	36.0	37.2	37.4	32.8	34.2	1
U-8	3- 5-62	3-14-62	151	26.6	10.8	10.0	10.2	35.4	32.4	33.7	30.8	29.0	30.2	1
Current Machine Average				26.6			9.9			36.4			33.4	
Cumulative Machine Average				26.7			9.7			37.3			35.0	
Machine Factor, %				99.4			102.0			97.7			95.4	
Machine Index, %				97.3			96.7			99.2			99.9	

a) Maximum speed at which this roll could be corrugated with minimum tension was 575 f.p.m.

TABLE XXIV

SUMMARY OF TEST RESULTS FOR MACHINE V
February and March, 1962

Code	Date Made	Date Recd.	Mill Roll No.	Basis Weight, lb. per 1000 sq. ft.	Caliper, points			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, maximum tension at 600 f.p.m., lb./in.
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
V-1	1-16-62	1-24-62	651	27.9	10.9	10.0	10.6	37.8	33.6	35.2	32.2	30.4	31.0	1
V-2	1-16-62	1-24-62	652	27.6	10.9	10.4	10.7	34.8	31.8	33.4	30.2	29.2	29.6	1
V-3	1-29-62	2- 8-62	665	28.1	10.8	10.2	10.4	41.4	36.6	39.5	33.0	31.4	32.4	1-1/2
V-4	1-29-62	2- 8-62	666	27.6	10.8	10.2	10.4	40.2	36.6	38.2	33.4	31.0	32.2	1-1/2
V-5	3- 5-62	3-13-62	681	28.7	12.0	11.2	11.5	40.2	34.2	36.5	33.2	28.6	31.2	1-1/2
V-6	3- 5-62	3-13-62	682	28.4	12.1	11.4	11.8	37.2	33.6	35.3	30.8	27.8	29.2	1/2
V-7	3-15-62	3-23-62	689	27.9	11.8	11.1	11.4	33.6	31.2	32.2	31.0	26.0	27.9	Min.
V-8	3-15-62	3-23-62	690	29.0	11.9	11.2	11.5	37.2	34.2	35.8	31.6	27.4	29.7	Min.
Current Machine Average				28.2			11.0			35.7			30.4	
Cumulative Machine Average				28.1			10.9			36.3			32.4	
Machine Factor, %				100.3			100.9			98.5			93.9	
Machine Index, %				103.1			107.9			97.4			90.9	

TABLE XXV

SUMMARY OF TEST RESULTS FOR MACHINE W
February and March, 1962

W-1	3- 3-62	3-13-62	3	28.0	10.0	9.1	9.5	33.6	32.4	32.9	31.0	28.6	30.1	1-1/2
W-2	3- 3-62	3-13-62	4	27.9	9.9	9.1	9.5	36.0	31.2	33.8	30.0	29.2	29.6	1-1/2
W-3	3- 3-62	3-13-62	5	28.1	10.0	9.1	9.6	36.6	34.2	35.2	32.2	30.0	31.1	1-1/2
W-4	3- 3-62	3-13-62	6	28.0	10.2	9.0	9.4	36.6	31.8	34.9	34.6	31.0	33.3	1-1/2
Current Machine Average				28.0			9.5			34.2			31.0	
Cumulative Machine Average				27.9			9.3			34.5			30.4	
Machine Factor, %				100.2			101.7			99.1			102.1	
Machine Index, %				102.5			93.0			93.2			92.9	

shown for each test. The latter over-all averages are reported as "current machine averages." A cumulative machine average is also shown and is calculated by averaging the current machine average for the previous twelve periods (excluding the current period). Also shown for each machine in Tables III to XXV are the machine factor and machine index which are defined as follows:

$$\frac{\text{current machine average}}{\text{cumulative machine average}} \times 100 = \text{machine factor (\%)}$$

$$\frac{\text{current machine average}}{\text{cumulative F.K.I. average}} \times 100 = \text{machine index (\%)}$$

The machine factor and machine index provide a means for comparing the current machine average with either the previous results for that particular machine or with the cumulative results for all machines--i.e., the cumulative F.K.I. average.

DISCUSSION OF RESULTS

Shown below from Table II are the maximum and minimum current machine averages noted for each test during the current period (February and March, 1962); the current machine average is the average of the results obtained on all rolls submitted from a given machine during the current period. Also given for each test is the current F.K.I. average which is determined by averaging the current machine averages for a given period and is indicative of the test level being maintained by the industry as a whole to the extent that the industry is represented by the participating machines:

	Maximum Current Machine Average	Minimum Current Machine Average	Current F.K.I. Average
Basis wt., lb.	28.7	26.1	27.2
Caliper, pt.	11.8	8.8	10.4
Concora flat crush, p.s.i.	40.8	33.0	36.3
Single-face flat crush, p.s.i.	34.9	28.3	32.0

The runnability data for the 156 rolls evaluated during February and March, 1962, are summarized as follows:

Runnability	Number of Rolls	Percentage of Total Rolls
Less than 600 f.p.m. with minimum tension	1	0.6
600 f.p.m.--minimum tension	5	3.2
600 f.p.m.--1/2 lb. per in. tension	9	5.8
600 f.p.m.--1 lb. per in. tension	13	8.3
600 f.p.m.--1-1/2 lb. per in. tension	128	82.1

In Table XXVI a comparison of Institute and mill Concora flat crush test results obtained on conditioned specimens is given for each machine for the current period. These comparisons permit interested participants to submit their Concora flat crush test results to The Institute of Paper Chemistry so that comparative results may be included in the monthly reports. Data sheets for supplying this information may be obtained from the Institute. Comparisons of this kind are a helpful adjunct to other calibration procedures. Shown in Table XXVI are the Institute and mill Concora averages for each roll included in these comparisons, the difference between the roll average based on Institute data and that based on mill data, the Institute and mill averages based on all rolls included in the comparison, and the difference between these over-all averages.

The Concora flat crush data shown in Table XXVI are summarized in Part I of Table XXVII where for each machine the following information is given: (1) Current machine average based on Institute data, (2) current machine average based on mill data, (3) the average difference--that is, the difference between the current machine average based on Institute data and that based on mill data and (4) the maximum difference encountered in comparing Institute and mill test averages for individual rolls. In Part II of Table XXVII the average differences given in Part I have been converted to per cent. Comparative data from the previous two reports are also included in Part II of Table XXVII. It may be seen in Part II of Table XXVII that, for the current period, the highest average difference of 6.1% was associated with Machine L and the lowest of 0.0% with Machine F.

In Table XXVIII a summary of the agreement between Institute and mill Concora flat crush data is given for the current period, and comparative data from the previous period (Dec., 1961, and Jan., 1962) are also included. The data shown for the current period indicate that agreement between Institute and

TABLE XXVI

INSTITUTE AND MILL CONCORA FLAT CRUSH TEST RESULTS ON INDIVIDUAL ROLLS FOR FEBRUARY AND MARCH, 1962

Machine B

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
B-1	472	9-28-61	38.0	37.4	-0.6
B-2	481	2- 2-62	37.3	37.9	+0.6
B-3	482	2- 3-62	36.5	38.7	+2.2
B-4	483	2-16-62	38.2	37.9	-0.3
B-5	484	2-17-62	38.0	38.8	+0.8
B-6	485	3- 3-62	36.7	40.1	+3.4
B-7	486	3- 4-62	35.8	38.2	+2.4
Current Machine Av.			37.2	38.4	+1.2

Machine C

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
C-1	661	1-26-62	33.1	37.1	+4.0
C-2	662	1-26-62	37.2	36.2	-1.0
C-3	669	2-18-62	33.8	36.7	+2.9
C-4	670	2-18-62	36.0	35.1	-0.9
C-5	677	2-22-62	37.0	36.1	-0.9
C-6	678	2-22-62	37.1	36.7	-0.4
C-7	685	3- 9-62	39.8	44.7	+4.9
C-8	686	3- 9-62	37.7	38.7	+1.0
Current Machine Av.			36.5	37.7	+1.2

Machine D

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
D-1	4	1-22-62	35.9	35.5	-0.4
D-2	5	1-27-62	34.7	40.8	+6.1
D-3	6	2-12-62	36.2	37.1	+0.9
D-4	7	2-20-62	35.4	36.5	+1.1
D-5	8	2-25-62	35.9	38.5	+2.6
D-6	9	3- 5-62	33.8	34.9	+1.1
D-7	10	3-10-62	35.5	36.1	+0.6
Current Machine Av.			35.3	37.1	+1.8

Machine E

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
E-1	--	2- 2-62	39.6	39.2	-0.4
E-2	--	2- 6-62	38.5	37.4	-1.1
E-3	--	2-10-62	37.0	36.6	-0.4
E-4	--	2-15-62	36.6	38.2	+1.6
E-5	--	3- 6-62	37.8	37.6	-0.2
E-6	--	3- 9-62	35.6	36.0	+0.4
E-7	--	3-13-62	35.3	35.6	+0.3
E-8	--	3-14-62	34.4	35.9	+1.5
Current Machine Av.			36.9	37.1	+0.2

Machine F

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
F-1	656	2-16-62	42.4	42.8	+0.4
F-2	657	2-27-62	39.4	37.4	-2.0
F-3	658	3-12-62	40.8	42.2	+1.4
Current Machine Av.			40.8	40.8	0.0

Machine H

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
H-1	192	1- 5-62	36.8	37.6	+0.8
H-2	193	1-16-62	32.6	34.9	+2.3
H-3	194	1-23-62	35.8	35.5	-0.3
H-4	195	1-29-62	34.7	35.4	+0.7
H-5	196	2- 2-62	34.7	34.0	-0.7
H-6	197	2-22-62	34.9	34.4	-0.5
Current Machine Av.			34.9	35.3	+0.4

Machine I

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
I-1	667	1-31-62	36.1	36.6	+0.5
I-2	668	1-31-62	36.1	35.8	-0.3
I-3	675	2-11-62	33.1	29.5	-3.6
I-4	676	2-11-62	35.4	35.5	+0.1
I-5	683	2-26-62	38.3	35.0	-3.3
I-6	684	2-26-62	36.2	34.3	-1.9
I-7	691	3-12-62	39.2	36.7	-2.5
I-8	692	3-12-62	38.8	38.6	-0.2
Current Machine Av.			36.7	35.2	-1.5

Machine J

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
J-1	5558	1-29-62	36.7	34.0	-2.7
J-2	860	2- 4-62	35.2	35.4	+0.2
J-3	2971	2-15-62	36.0	34.5	-1.5
J-4	3800	2-20-62	34.9	36.8	+1.9
Current Machine Av.			35.7	35.2	-0.5

Machine L

Code	Mill Roll No.	Date Made	Concora Flat Crush, p.s.i. Institute	Mill	Difference[a]
L-1	4	1-22-62	35.0	36.6	+1.6
L-2	5	1-27-62	32.8	36.7	+3.9
L-3	6	2-12-62	34.1	38.2	+4.1
L-4	7	2-19-62	34.0	34.1	+0.1
L-5	8	2-24-62	34.6	36.4	+1.8
L-6	9	3- 5-62	34.4	36.7	+2.3
L-7	10	3-11-62	37.1	38.2	+1.1
Current Machine Av.			34.6	36.7	+2.1

[a]This difference is the amount in p.s.i. units by which the mill result is higher or lower than the Institute result.

TABLE XXVI (Continued)

INSTITUTE AND MILL CONCORA FLAT CRUSH TEST RESULTS ON INDIVIDUAL ROLLS FOR FEBRUARY AND MARCH, 1962

Machine M						Machine N						Machine O					
			Concora Flat Crush, p.s.i.						Concora Flat Crush, p.s.i.						Concora Flat Crush, p.s.i.		
Code	Mill Roll No.	Date Made	Institute	Mill	Difference[a]	Code	Mill Roll No.	Date Made	Institute	Mill	Difference[a]	Code	Mill Roll No.	Date Made	Institute	Mill	Difference[a]
M-1	301	1-30-62	36.6	38.4	+1.8	N-1	--	2- 1-62	35.9	35.5	-0.4	O-1	41	1- 5-62	35.6	36.1	+0.5
M-2	302	1-31-62	38.2	38.3	+0.1	N-2	--	2- 5-62	35.2	35.3	+0.1	O-2	42	1- 9-62	33.7	36.4	+2.7
M-3	303	2- 5-62	39.0	40.3	+1.3	N-3	--	2-10-62	37.0	36.0	-1.0	O-3	43	1-12-62	35.5	37.4	+1.9
M-4	304	2-13-62	41.0	41.4	+0.4	N-4	--	2-14-62	37.4	37.6	+0.2	O-4	44	1-16-62	32.9	33.8	+0.9
M-5	305	2-22-62	38.5	39.5	+1.0	N-5	--	3-13-62	35.4	35.0	-0.4	O-5	45	1-23-62	33.4	36.0	+2.6
M-6	306	3-12-62	38.4	40.9	+2.5	N-6	--	3-17-62	34.9	36.2	+1.3	O-6	46	1-29-62	32.3	34.7	+2.4
						N-7	--	3-20-62	36.1	35.8	-0.3						
						N-8	--	3-21-62	35.8	35.6	-0.2						
Current Machine Av.			38.6	39.8	+1.2	Current Machine Av.			36.0	35.9	-0.1	Current Machine Av.			33.9	35.7	+1.8
Machine P						Machine S						Machine T					
P-1	481	2- 4-62	37.2	38.5	+1.3	S-1	348	1-30-62	36.2	37.4	+1.2	T-1	--	1-19-62	37.8	36.0	-1.8
P-2	482	2- 6-62	36.4	39.4	+3.0	S-2	349	2- 7-62	36.0	37.3	+1.3	T-2	--	2- 3-62	35.3	35.9	+0.6
P-3	483	2-10-62	34.8	37.0	+2.2	S-3	350	2-14-62	37.4	36.4	-1.0	T-3	--	2- 7-62	37.3	37.4	+0.1
P-4	484	2-11-62	36.6	37.5	+0.9	S-4	351	2-21-62	40.6	38.5	-2.1	T-4	--	2-13-62	34.1	37.1	+3.0
P-5	485	3-11-62	36.8	37.5	+0.7	S-5	352	2-27-62	35.6	36.4	+0.8	T-5	--	2-19-62	37.3	38.4	+1.1
P-6	486	3-14-62	35.8	38.7	+2.9	S-6	353	3- 9-62	37.4	36.8	-0.6	T-6	--	3- 7-62	34.4	36.7	+2.3
P-7	487	3-14-62	36.4	37.2	+0.8	S-7	354	3-14-62	44.9	40.6	-4.3	T-7	--	3-15-62	38.4	37.8	-0.6
												T-8	--	3-16-62	38.6	37.8	-0.8
												T-9	--	3-17-62	35.8	36.5	+0.7
Current Machine Av.			36.3	38.0	+1.7	Current Machine Av.			38.3	37.6	-0.7	Current Machine Av.			36.6	37.1	+0.5
Machine U						Machine V						Machine W					
U-1	41	1- 2-62	36.0	38.6	+2.6	V-1	651	1-16-62	35.2	34.2	-1.0	W-1	3	3- 3-62	32.9	36.0	+3.1
U-2	241	1- 8-62	37.7	36.1	-1.6	V-2	652	1-16-62	33.4	33.8	+0.4	W-2	4	3- 3-62	33.8	34.8	+1.0
U-3	717	1-24-62	35.5	36.2	+0.7	V-3	665	1-29-62	39.5	37.1	-2.4	W-3	5	3- 3-62	35.2	36.5	+1.3
U-4	875	1-29-62	37.0	40.3	+3.3	V-4	666	1-29-62	38.2	37.4	-0.8	W-4	6	3- 3-62	34.9	35.0	+0.1
U-5	4	2- 1-62	37.3	37.1	-0.2	V-5	681	3- 5-62	36.5	31.9	-4.6						
U-6	408	2-14-62	36.8	37.7	+0.9	V-6	682	3- 5-62	35.3	36.5	+1.2						
U-7	8	3- 1-62	37.2	37.7	+0.5												
U-8	151	3- 5-62	33.7	35.0	+1.3												
Current Machine Av.			36.4	37.3	+0.9	Current Machine Av.			36.4	35.2	-1.2	Current Machine Av.			34.2	35.6	+1.4

[a]This difference is the amount in p.s.i. units by which the mill result is higher or lower than the Institute result.

TABLE XXVII

PART I: A COMPARATIVE SUMMARY FOR EACH MACHINE OF THE CONCORA FLAT CRUSH AVERAGES BASED ON INSTITUTE DATA AND THOSE BASED ON MILL DATA

Machine Code	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
Number of Rolls Compared	0	7	8	7	8	3	0	6	8	4	0	7	6	8	6	7	0	0	7	9	8	6	4
Concora Flat Crush, p.s.i.																							
Current Machine Av. (Institute)[a]	--	37.2	36.5	35.3	36.9	40.8	--	34.9	36.7	35.7	--	34.6	38.6	36.0	33.9	36.3	--	--	38.3	36.6	36.4	36.4	34.2
Current Machine Av. (Mill)[a]	--	38.4	37.7	37.1	37.1	40.8	--	35.3	35.2	35.2	--	36.7	39.8	35.9	35.7	38.0	--	--	37.6	37.1	37.3	35.2	35.6
Average Difference[b]	--	+1.2	+1.2	+1.8	+0.2	0.0	--	+0.4	-1.5	-0.5	--	+2.1	+1.2	-0.1	+1.8	+1.7	--	--	-0.7	+0.5	+0.9	-1.2	+1.4
Maximum Difference[c]	--	+3.4	+4.9	+6.1	+1.6	-2.0	--	+2.3	-3.6	-2.7	--	+4.1	+2.5	+1.3	+2.7	+3.0	--	--	-4.3	+3.0	+3.3	-4.6	+3.1

PART II: A TABULATION FOR EACH MACHINE OF THE AVERAGE DIFFERENCE (PER CENT) BETWEEN THE CONCORA FLAT CRUSH BASED ON INSTITUTE DATA AND THAT BASED ON MILL DATA

Average Difference, %[d]																							
Current Report (Feb. and March)	--	+3.2	+3.3	+5.1	+0.5	0.0	--	+1.1	-4.1	-1.4	--	+6.1	+3.1	-0.3	+5.3	+4.7	--	--	-1.8	+1.4	+2.5	-3.3	+4.1
93rd Report (Dec. and Jan.)	--	+2.1	+4.8	+0.8	+0.5	+1.9	--	+2.6	-0.6	-5.9	+5.0	+5.5	+3.3	-0.5	+1.5	+7.3	--	-4.0	-1.3	-1.9	+5.2	-2.3	-8.3
92nd Report (Nov.)	--	+4.5	-0.5	--	--	+2.8	--	+3.9	+12.6	-1.7	--	--	+1.8	--	--	+8.0	--	--	--	--	+11.3	-6.8	+4.3

[a] Comparisons based on current machine average include only those rolls for which mill data were submitted.

[b] Average difference is the difference between the current machine average based on Institute test results and that based on mill test results with the Institute test results used as the reference. See Table XXVI.

[c] Maximum difference is the greatest difference encountered in comparing Institute and mill test averages for individual rolls. See Table XXVI.

[d] Average difference (per cent) is computed by dividing the average difference in p.s.i. (shown above in Part I of this table) by the Institute current machine average and multiplying the result by 100.

mill Concora data was good. It may be seen in Table XXVIII that 83.3% of the comparisons of Institute and mill data differed by 5% or less.

TABLE XXVIII

SUMMARY OF AGREEMENT BETWEEN INSTITUTE AND MILL
CONCORA FLAT CRUSH DATA

Average Percentage Difference Between Institute and Mill Concora Flat Crush Test Results[a]	Percentage of All Machines Included Within the Indicated Range	
	Previous Period[b]	Current Period[c]
± 1.0	20.0	16.7
± 2.5	50.0	44.4
± 5.0	75.0	83.3
±10.0	100.0[d]	100.0[e]

[a] The average obtained at the Institute was used as the reference in the calculation of the percentage differences.
[b] December, 1961, and January, 1962.
[c] February and March, 1962
[d] Maximum percentage difference was 8.3.
[e] Maximum percentage difference was 6.1.

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